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Patent Number: JP63266814
Publication date: 1988-11-02
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Requested Patent: ☐ JP63266814
Application Number: JP19870099893 19870424
Priority Number(s):
IPC Classification: H01L21/205
EC Classification:
EC Classification:
Equivalents:

Abstract

PURPOSE: To form an superthin film of Al III-V compound semiconductor by an atomic layer epitaxy by supplying in advance Al organic compound to a decomposing area to decompose the compound, condensing and removing generated sole aluminum, and then supplying the decomposed gas onto a substrate.

CONSTITUTION: A carbon tube 2 is mounted in a quartz reaction tube 1, and set at a predetermined temperature. Hydrogen gas of carrier gas 3 is fed from left to right to transport $\text{Al}(\text{C}_2\text{H}_5)_2\text{Cl}$. Carbon decomposition reaction accelerating plates 5 are arranged on a decomposing area 4 at the upstream of a substrate in the tube 2, and a carbon substrate holder 6 for placing the substrate 7 is provided at the downstream of the area. Then, above semiconductor thin film forming apparatus is used to grown AIAs on the substrate, AsH_3 is introduced as group V element gaseous compound through a carbon bypass tube 8 bypassing the decomposing area to the periphery of the substrate. Thus, the extremely thin film of Al III-V compound semiconductor can be formed under good controllability.